



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/632,232	07/31/2003	John E. Schreiber	Serie 6041	2544
7590	06/14/2005			
Air Liquide Suite 1800 2700 Post Oak Blvd. Houston, TX 77056				
EXAMINER DOERRLER, WILLIAM CHARLES				
ART UNIT		PAPER NUMBER		
3744				

DATE MAILED: 06/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.



RECEIVED
JUN 16 2005
INTELLECTUAL PROPERTY
HOUSTON, TX.

Interview Summary	Application No.	Applicant(s)	
	10/632,232	SCHREIBER ET AL.	
	Examiner	Art Unit	
	William C. Doerrler	3744	

All participants (applicant, applicant's representative, PTO personnel):

(1) William C. Doerrler.

(3) Chris Cronin, Lee Haines and.

(2) Linda Russell (attorney of record).

(4) Brandon Clark, applicants representatives.

Date of Interview: 09 June 2005.

Type: a) ☒ Telephonic b) ☐ Video Conference
c) ☐ Personal [copy given to: 1) ☐ applicant 2) ☐ applicant's representative]

Exhibit shown or demonstration conducted: d) ☐ Yes e) ☒ No.
If Yes, brief description: _____.

Claim(s) discussed: 14-30.

Identification of prior art discussed: Mc Kee and the '240 Japanese reference.

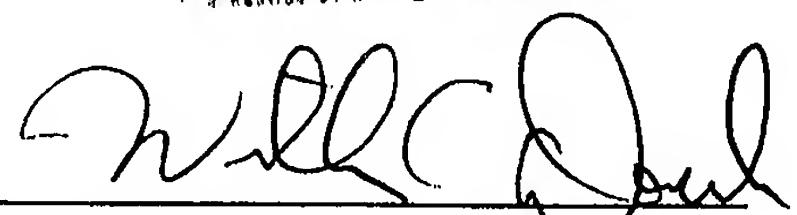
Agreement with respect to the claims f) ☒ was reached. g) ☐ was not reached. h) ☐ N/A.

Substance of Interview including description of the general nature of what was agreed to if an agreement was reached, or any other comments: See Continuation Sheet.

(A fuller description, if necessary, and a copy of the amendments which the examiner agreed would render the claims allowable, if available, must be attached. Also, where no copy of the amendments that would render the claims allowable is available, a summary thereof must be attached.)

THE FORMAL WRITTEN REPLY TO THE LAST OFFICE ACTION MUST INCLUDE THE SUBSTANCE OF THE INTERVIEW. (See MPEP Section 713.04). If a reply to the last Office action has already been filed, APPLICANT IS GIVEN ONE MONTH FROM THIS INTERVIEW DATE, OR THE MAILING DATE OF THIS INTERVIEW SUMMARY FORM, WHICHEVER IS LATER, TO FILE A STATEMENT OF THE SUBSTANCE OF THE INTERVIEW. See Summary of Record of Interview requirements on reverse side or on attached sheet.

WILLIAM DOERRLER
PRIMARY EXAMINER



Examiner's signature, if required

Examiner Note: You must sign this form unless it is an Attachment to a signed Office action.

Summary of Record of Interview Requirements

Manual of Patent Examining Procedure (MPEP), Section 713.04, Substance of Interview Must be Made of Record

A complete written statement as to the substance of any face-to-face, video conference, or telephone interview with regard to an application must be made of record in the application whether or not an agreement with the examiner was reached at the interview.

Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews Paragraph (b)

In every instance where reconsideration is requested in view of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the applicant. An interview does not remove the necessity for reply to Office action as specified in §§ 1.111, 1.135. (35 U.S.C. 132)

37 CFR §1.2 Business to be transacted in writing.

All business with the Patent or Trademark Office should be transacted in writing. The personal attendance of applicants or their attorneys or agents at the Patent and Trademark Office is unnecessary. The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt.

The action of the Patent and Trademark Office cannot be based exclusively on the written record in the Office if that record is itself incomplete through the failure to record the substance of interviews.

It is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiner's responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability.

Examiners must complete an Interview Summary Form for each interview held where a matter of substance has been discussed during the interview by checking the appropriate boxes and filling in the blanks. Discussions regarding only procedural matters, directed solely to restriction requirements for which interview recordation is otherwise provided for in Section 812.01 of the Manual of Patent Examining Procedure, or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below. Where the substance of an interview is completely recorded in an Examiners Amendment, no separate Interview Summary Record is required.

The Interview Summary Form shall be given an appropriate Paper No., placed in the right hand portion of the file, and listed on the "Contents" section of the file wrapper. In a personal interview, a duplicate of the Form is given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephone or video-conference interview, the copy is mailed to the applicant's correspondence address either with or prior to the next official communication. If additional correspondence from the examiner is not likely before an allowance or if other circumstances dictate, the Form should be mailed promptly after the interview rather than with the next official communication.

The Form provides for recordation of the following information:

- Application Number (Series Code and Serial Number)
- Name of applicant
- Name of examiner
- Date of interview
- Type of interview (telephonic, video-conference, or personal)
- Name of participant(s) (applicant, attorney or agent, examiner, other PTO personnel, etc.)
- An indication whether or not an exhibit was shown or a demonstration conducted
- An identification of the specific prior art discussed
- An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). Note: Agreement as to allowability is tentative and does not restrict further action by the examiner to the contrary.
- The signature of the examiner who conducted the interview (if Form is not an attachment to a signed Office action)

It is desirable that the examiner orally remind the applicant of his or her obligation to record the substance of the interview of each case. It should be noted, however, that the Interview Summary Form will not normally be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview.

A complete and proper recordation of the substance of any interview should include at least the following applicable items:

- 1) A brief description of the nature of any exhibit shown or any demonstration conducted,
- 2) an identification of the claims discussed,
- 3) an identification of the specific prior art discussed,
- 4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the Examiner,
- 5) a brief identification of the general thrust of the principal arguments presented to the examiner,
(The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he or she feels were or might be persuasive to the examiner.)
- 6) a general indication of any other pertinent matters discussed, and
- 7) if appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicant's record of the substance of an interview. If the record is not complete and accurate, the examiner will give the applicant an extendable one month time period to correct the record.

Examiner to Check for Accuracy

If the claims are allowable for other reasons of record, the examiner should send a letter setting forth the examiner's version of the statement attributed to him or her. If the record is complete and accurate, the examiner should place the indication, "Interview Record OK" on the paper recording the substance of the interview along with the date and the examiner's initials.

Continuation of Substance of Interview including description of the general nature of what was agreed to if an agreement was reached, or any other comments: It was agreed that claims 14-30 are not anticipated or obvious over McKee or the Japanese '240 reference. Claims 14 and 28 both require gaseous ozone to contact either liquid (cl 14) or solid (cl 28) carbon dioxide. The Japanese reference combines ice with entrained ozone with dry ice. McKee is vague as to the nature of the ozone, never stating that the ozone is a gas and stating that the ozone is injected into a 1000 psi stream of carbon dioxide. With a pressure of greater than 1000 psi given for the carbon dioxide (so the ozone must be higher), it is unclear how the ozone can be a gas when the critical pressure of ozone is 808psi (CRC handbook). Since the ozone is apparently supercritical in McKee, claims 14 and 28 are allowable over McKee, as written.



UNITED STATES PATENT AND TRADEMARK OFFICE

Lee

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/632,232	07/31/2003	John E. Schreiber	Serie 6041	2544

7590 04/12/2005

Air Liquide
Suite 1800
2700 Post Oak Blvd.
Houston, TX 77056

EXAMINER

DOERRLER, WILLIAM CHARLES

ART UNIT PAPER NUMBER

3744

DATE MAILED: 04/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

O f f i c e

A c t i o n

R e s p o n s e

d o c

7-12-05

RECEIVED

APR 14 2005

INTELLECTUAL PROPERTY
HOUSTON, TX.

Office Action Summary	Application No. 10/632,232	Applicant(s) SCHREIBER ET AL.	
	Examiner William C Doerrler	Art Unit 3744	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 February 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-44 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-44 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

✓ Claims 1-4,9,10,14-18,27,28,31 and 32 are rejected under 35 U.S.C. 102(b) as being anticipated by McKee.

McKee shows a system for producing solid carbon dioxide with ozone dissolved in the carbon dioxide. In regard to the water content of the product, it is noted that in line 100 of page 2 that McKee uses "industrial carbon dioxide" which does not contain water, and no water is added in the disclosed steps. In regard to claim 10, line 75 of page 1 states that .01% of the product produced is ozone. In regard to claim 27, line 97 of page 1 states that 10% of the oxygen stream used is converted to ozone prior to being absorbed into the carbon dioxide with the oxygen remaining as an "inert gas". Lines 38-41 of page 2 state that the contacting of the carbon dioxide with ozone may occur anywhere in the system.

Claims 1,5-8 and 31-35 are rejected under 35 U.S.C. 102(b) as being anticipated by the Japanese 07-102240 reference from the IDS (machine translation enclosed herein).

The 07-102240 Japanese reference discloses that "ozone can be remarkably shut up into dry ice" (line 1 of the "operation" translation). The ozone is released as the dry ice

Art Unit: 3744

sublimates ("since ozone is also evaporated together with sublimation of dry ice", line 3 of the translation of the Operation section. Figure 2 shows a block containing dry ice and ozone. Figure 1 shows a powder of dry ice and ozone.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 5-8, 11-13, 19-24, 26 and 29-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over McKee.

McKee discloses the production of dry ice with entrained ozone. McKee does not state what form the dry ice is in or the use of the dry ice. However applicant's specification, specifically line 12 of page 12 and line 8 of page 3, state that "the form of blocks,

Art Unit: 3744

pellets, flakes, powders, and other possible forms (are) well known in the art" (the are being added) and that carbon dioxide is "frequently used as an expendable refrigerant", respectively. It therefore would have been obvious to one of ordinary skill in the art at the time of applicants' invention to use the device of McKee to produce dry ice in blocks, pellets, flakes or powders to provide cooling to perishable items to ensure a high quality product that is free of odors. In regard to claims 11 and 41, the use of less ozone is seen as a matter of obvious design choice for an ordinary practitioner in the art depending on the intended use and duration thereof. In regard to claim 22, the use of a lower pressure is also seen as a matter of design choice for an ordinary practitioner in the art to maximize the economy of the process (i.e. lower pressures are easier to obtain).

Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over McKee in view of Kiyonaga et al.

McKee discloses applicants' basic inventive concept, injecting ozone into carbon dioxide before freezing the mixture, substantially as claimed with the exception of injecting the ozone into an expanding stream of liquid. Kiyonaga et al show the injection of a gas into an expanding stream of liquid to be old in the injection and fluid mixing art. It would have been obvious to one of ordinary skill in the art at the time of applicants' invention from the teaching of Kiyonaga et al to modify the process of McKee by injecting the ozone into the liquid carbon dioxide where the carbon dioxide expands to improve the fluid mixing and absorption of the gas into the liquid.

Claims 2-4,9-13 and 36-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over the '240 Japanese reference in view of McKee.

The '240 Japanese reference discloses applicants' basic inventive concept, a dry ice with entrapped ozone, substantially as claimed with the exception of forming the dry ice without water. McKee shows the forming of dry ice without water to be old in the dry ice art. It would have been obvious to one of ordinary skill in the art at the time of applicants' invention from the teaching of McKee to modify the dry ice of the '240 Japanese reference by forming the dry ice without water to prevent wetting of the treating foodstuffs. McKee also teaches the ozone ranges as claimed as described above.

Response to Arguments

Applicant's arguments filed 2-10-2005 have been fully considered but they are not persuasive. Line 41 of page 2 of McKee states that the ozone may be presented at any point in the dry ice producing system. This will include contacting the liquid carbon dioxide with gaseous ozone. The ozone in McKee is produced at high pressure. It is injected at high pressure into the carbon dioxide because at the shown injection point the carbon dioxide is at high pressure. Since McKee states that the ozone may be injected anywhere, the pressure for injecting the ozone need not be high if the pressure for the carbon dioxide is no longer high. Since McKee clearly shows the solidification of liquid carbon dioxide and states that the ozone may be injected anywhere in the system, the injection of gaseous ozone into liquid or solid is seen as taught by McKee. Injecting the solid will also enable a drop in pressure of the ozone since carbon dioxide entering

Art Unit: 3744

the ozone supply will not be a problem if the carbon dioxide is at low pressure. Line 10 of page 1 states that dry ice is used to cool food products. This leads one of ordinary skill in the art to use the dry ice of McKee (which will have ozone entrained therein) to cool food products. The fact that the ozone of the reference is produced at exceedingly high pressure is not seen to negative the teaching that ozone can be injected into a carbon dioxide solidification process at any point since there are many known methods of producing ozone. Even if little ozone is left in the produced dry ice, the claimed structure is still seen as being met since applicant has claimed an upper limit of 100 ppm of ozone in the dry ice. Even if three molecules of ozone are entrained in a 10 pound block of dry ice in the process of McKee, the structure of claim 1 will still be met.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William C Doerrler whose telephone number is (571) 272-4807. The examiner can normally be reached on Monday-Friday 6:30-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Denise Esquivel can be reached on (571) 272-4808. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 3744

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



William C Doerrler
Primary Examiner
Art Unit 3744

WCD

Notice of References Cited

Application/Control No.

10/632,232

Applicant(s)/Patent Under
Reexamination
SCHREIBER ET AL.

Examiner

William C Doerrier

Art Unit

3744

Page 1 of 1

JUL 22 2005

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
	A	US-			
	B	US-			
	C	US-			
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	machine translation of Japanese reference 07-102240
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.